

ABSTRACT

A photomask blank comprising a multilayer film
5 including at least four layers of different compositions,
wherein the interface between the layers is moderately graded
in composition; a phase shift mask blank comprising a phase
shift film of at least two layers including a surface layer
of a composition based on a zirconium silicide compound and a
10 substrate adjacent layer of a composition based on a
molybdenum silicide compound, and a further layer between one
layer and another layer of a different composition, the
further layer having a composition moderately graded from
that of the one layer to that of the other layer; a phase
15 shift mask blank comprising a phase shift film including a
plurality of layers containing a metal and silicon in
different compositional ratios which are stacked in such
order that a layer having a higher etching rate is on the
substrate side and a layer having a lower etching rate is on
20 the surface side. The invention provides a photomask blank,
typically a phase shift mask blank, which satisfies optical
properties such as transmittance, reflectance and refractive
index at an exposure wavelength of interest, and has an
etched pattern with a minimal line edge roughness, and a
25 photomask, typically a phase shift mask obtained therefrom.